



**CH2MHILL**



# Proposed Statewide Fish Tissue Monitoring Program for Mercury

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Quality Monitoring Results Workshop



# Outline

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- Background on the Fish Tissue Criterion for Mercury
- Proposed Statewide Monitoring Approach
- Next Steps

# Background

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- Fish tissue criterion for mercury promulgated by EPA in 2001
  - Radically different concept in water quality protection
    - *Fish tissue based criterion*
    - *Driven by human health exposure*
  - Regulates methylmercury in fish tissue, versus total mercury in water column







# Negotiated Rulemaking

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- IDEQ began Negotiated Rulemaking process in Fall 2003 to promulgate methylmercury standard in Idaho
  - Idaho Mining Association petition
  - First state to promulgate standard and implementation guidance
  - No formal EPA implementation guidance available



# Committee Members

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- Members of Negotiated Rulemaking Committee included (among others)
  - Agencies: IDEQ, EPA Region 10, NOAA, USFWS
  - Mining: Idaho Mining Association, Hecla
  - Municipalities: Association of Idaho Cities, Boise, Meridian, Idaho Falls
  - Environmental Groups: Idaho Conservation League, Advocates for the West
  - Industry: Idaho Association of Industry and Commerce

# Implementation Guidance

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- Introduction of Fish Tissue Criterion
- Idaho Fish Tissue Criterion
- Monitoring and Assessment
- TMDL Program
- NPDES Program
- Protection of Aquatic Species
- Integration with Other Programs



[http://www.deq.state.id.us/rules/water/  
58\\_0102\\_0302\\_pending.cfm](http://www.deq.state.id.us/rules/water/58_0102_0302_pending.cfm)



# Implementation Guidance

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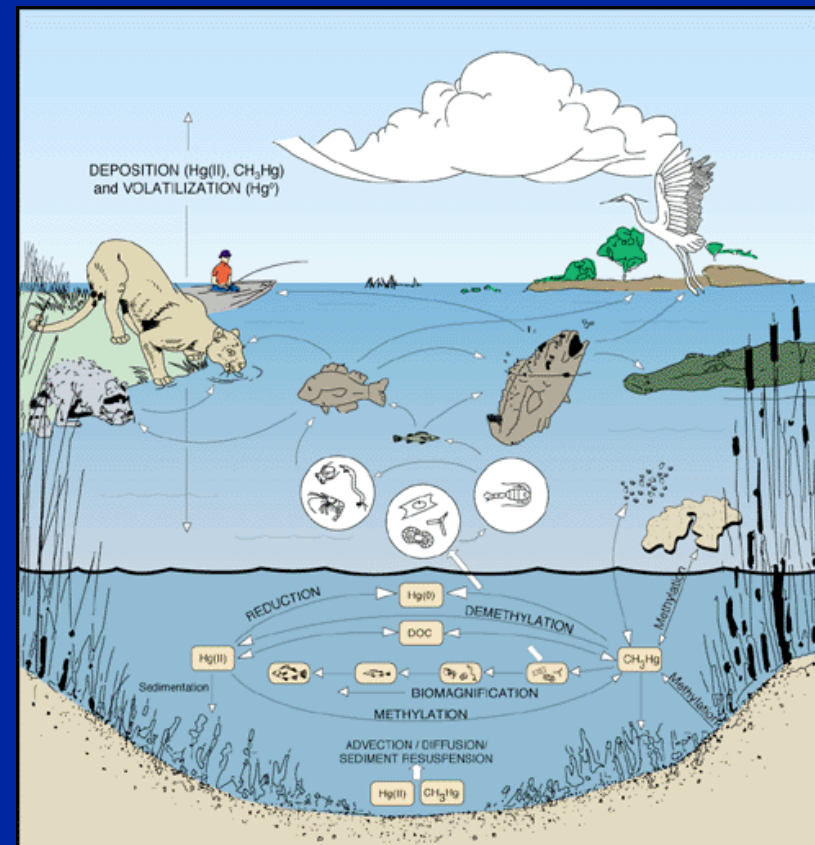
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# Why the interest in mercury in fish?

- Five Idaho water bodies have mercury advisories
  - Brownlee
  - C. J. Strike
  - Lake Coeur d'Alene
  - Lake Lowell
  - Salmon Falls Creek Reservoir



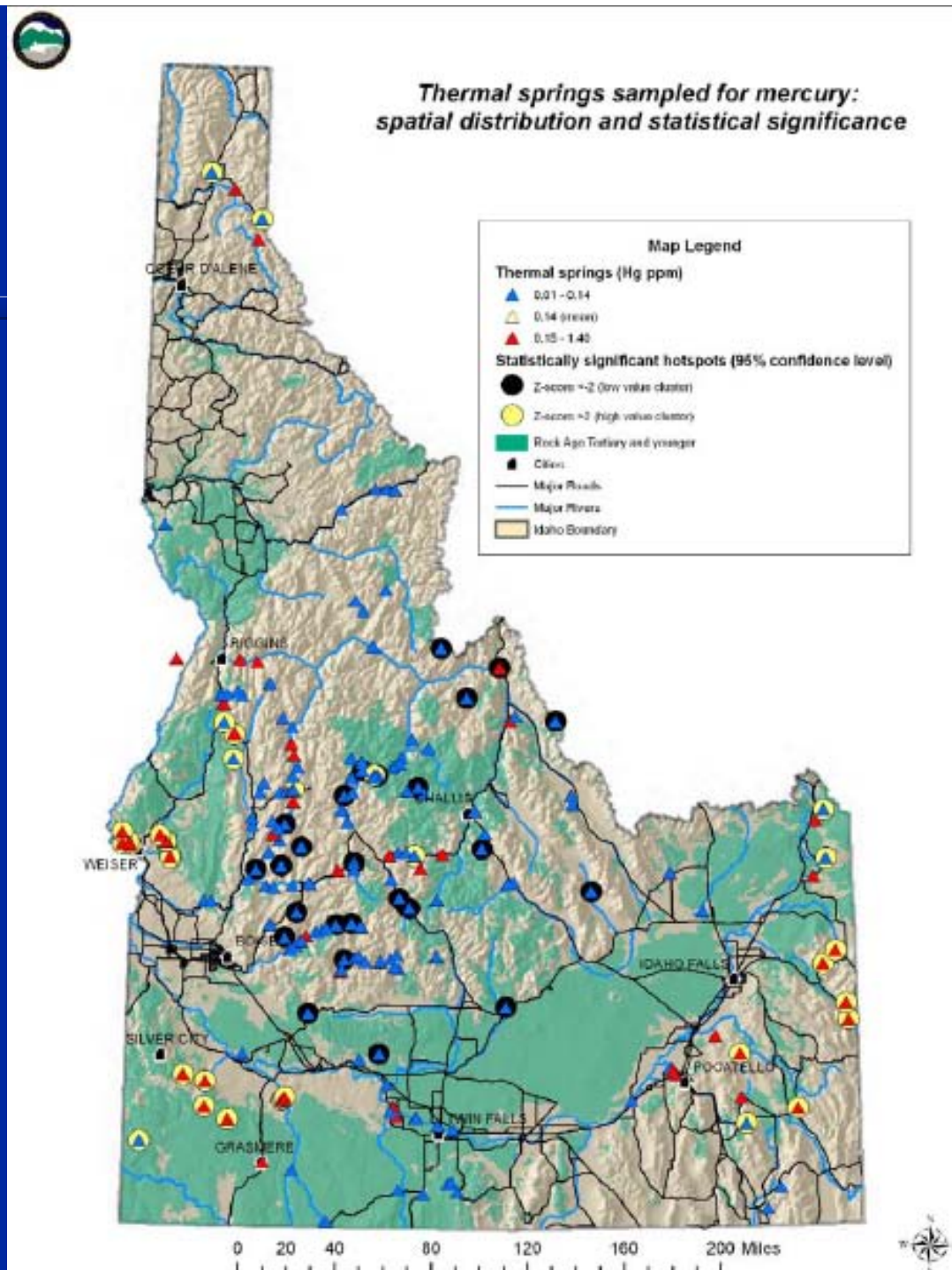
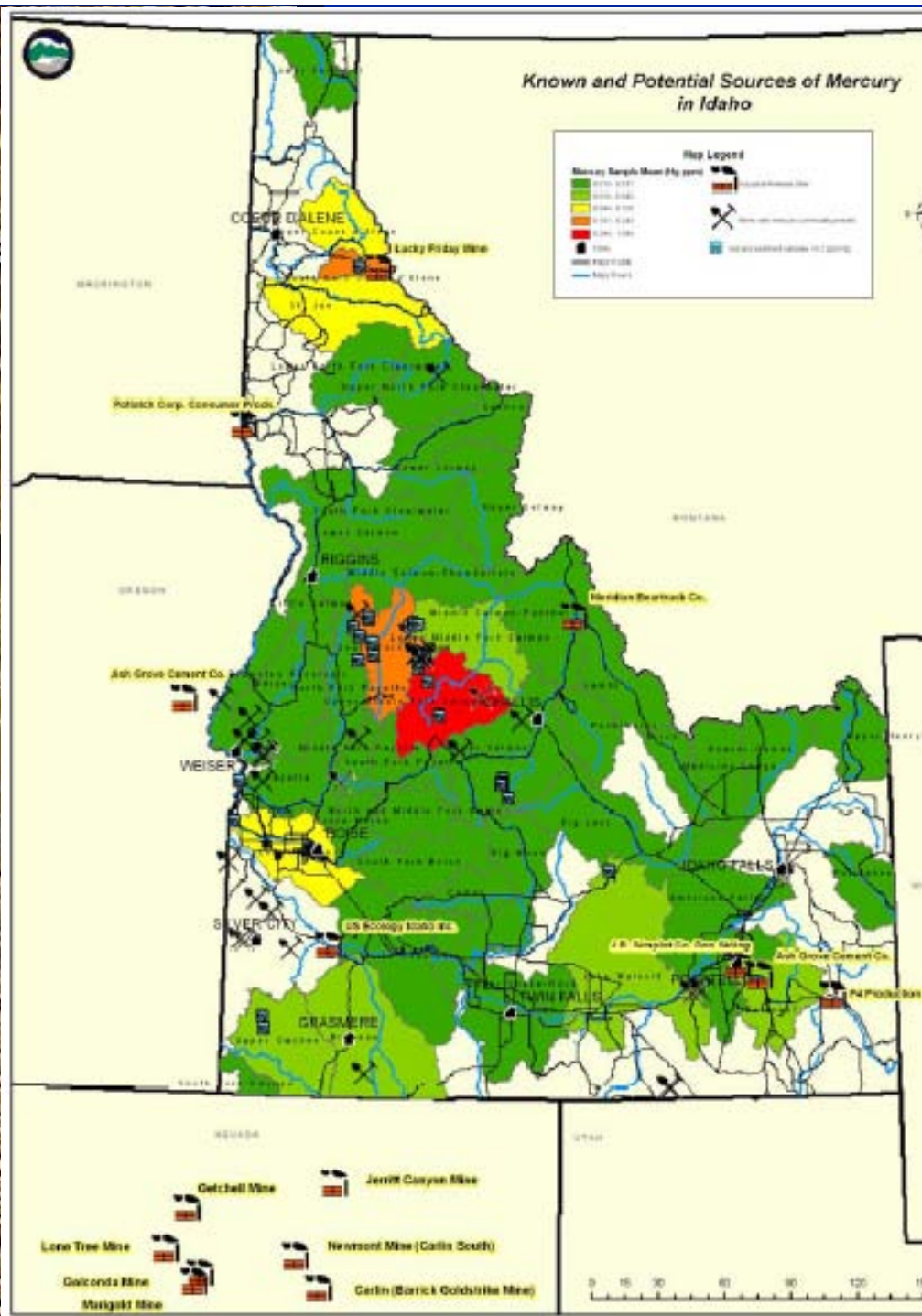


# What are the sources of mercury in Idaho?

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- Natural sources
  - Naturally-occurring ore associated with epithermal gold deposits and hot springs/volcanoes, geologically-enriched soils
- Anthropogenic sources
  - Historic placer mining
  - Gold ore roasting in northern Nevada
  - Air emissions from regional combustion sources









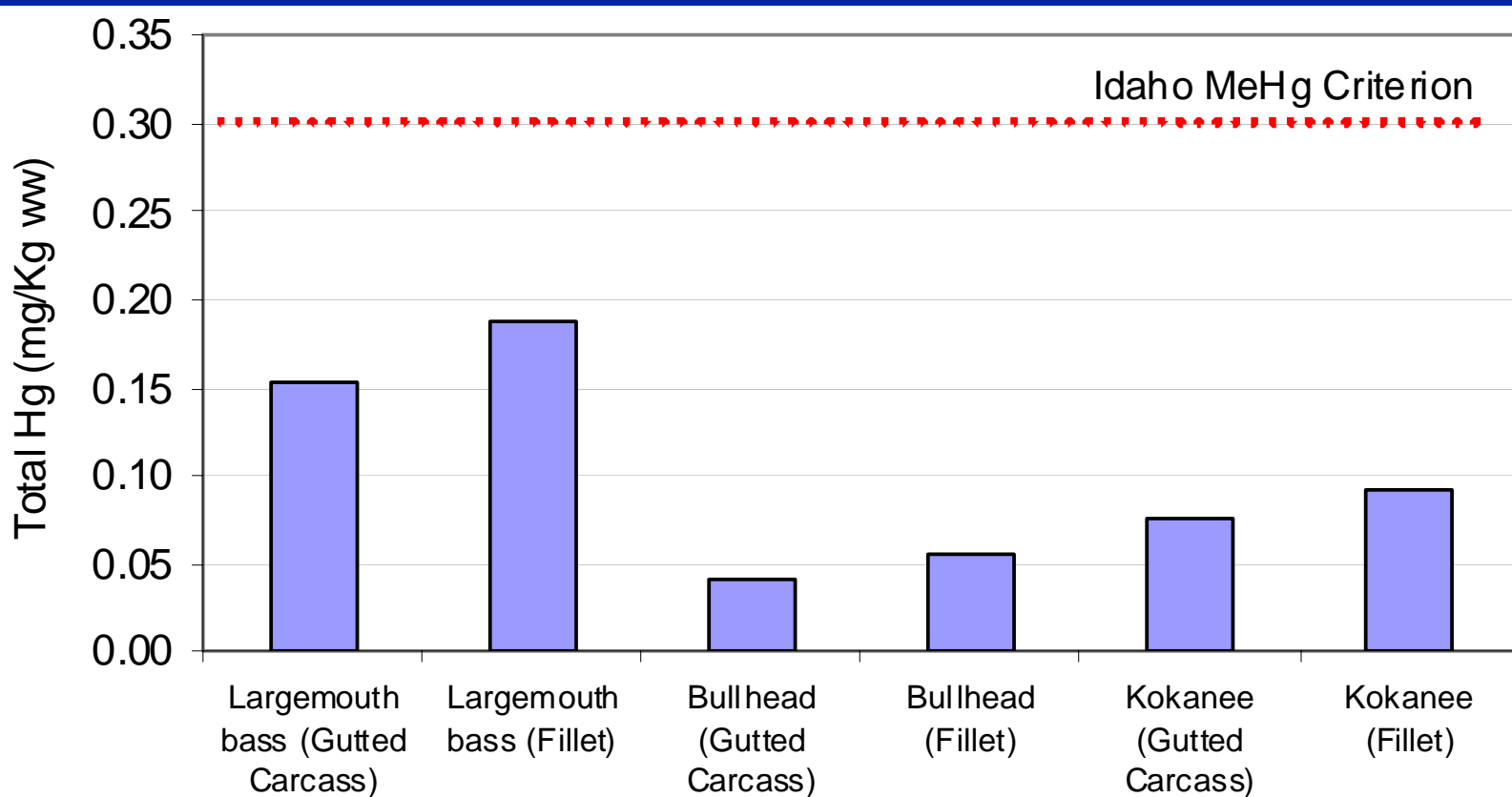
# What do the available mercury data in Idaho show?

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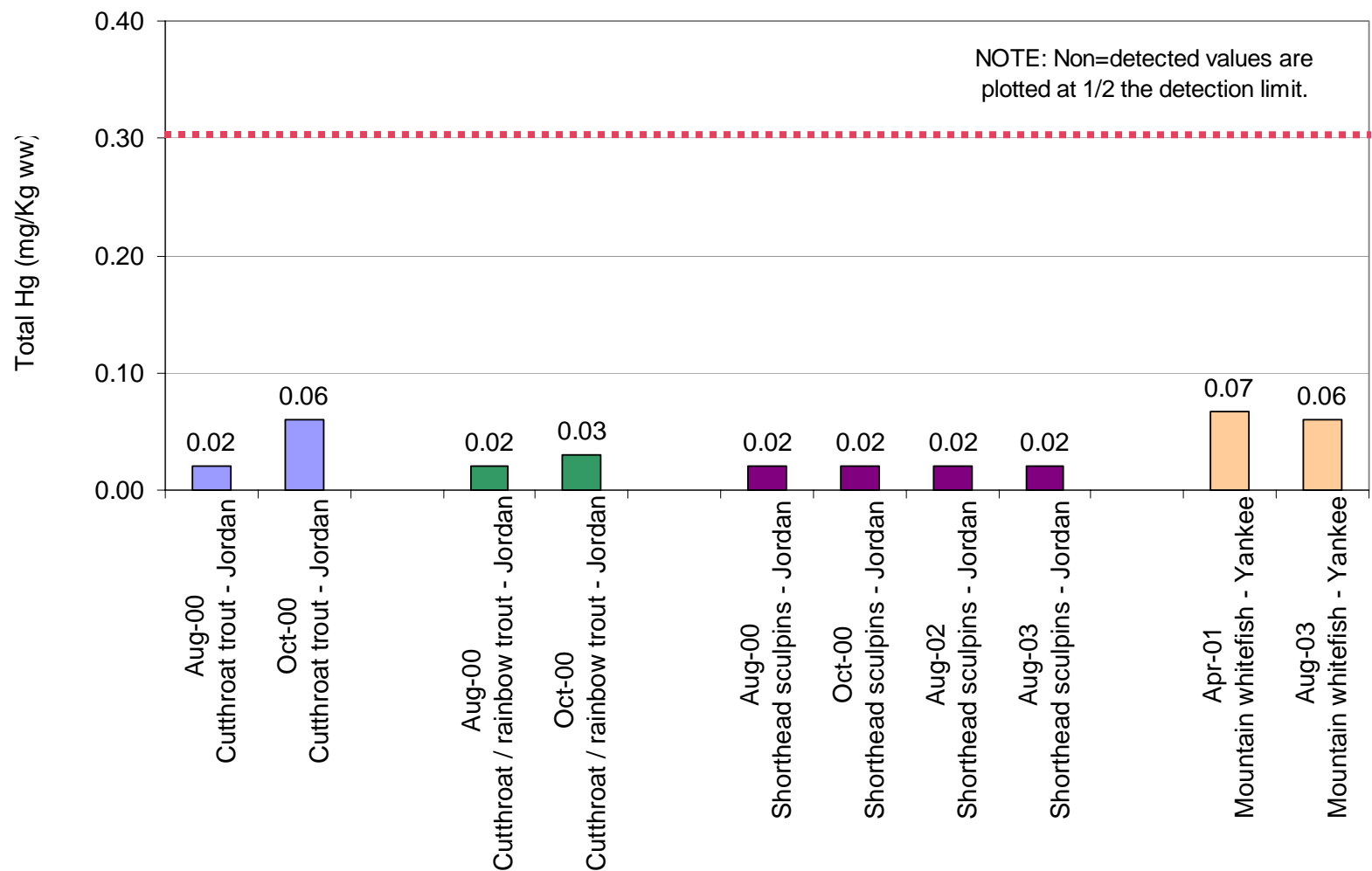
- Limited Idaho studies on mercury in fish tissue, mostly focused on areas likely to present a health risk
- USGS monitoring since 1992
  - Of 69 tissue samples collected, 20%  $\geq 3.0$  mg/Kg
  - Of water samples collected, 7%  $\geq 0.77$   $\mu\text{g/L}$ 
    - *EPA's 2002 recommended chronic aquatic life criteria*



# Lake Coeur d'Alene Data



# Jordan Creek and Yankee Fork Data





# Proposed Statewide Monitoring Approach

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- Currently, mercury monitoring is conducted only as required by
  - Selected NPDES permits
  - Periodic USGS monitoring
  - Periodic Idaho Fish Consumption Advisory Program monitoring
  - TMDL drivers





# Benefits of Statewide Approach

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- Provides more reliable data
- Covers unknowns using combination of deterministic (targeted) and probabilistic (random) sampling
- Offers cost effectiveness
- Focuses on *avoiding wasted monitoring, not avoiding monitoring waste*



# Relies on Fish Tissue Monitoring Only

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- Concentrations of mercury in fish tissue represent a long-term integrated exposure to mercury throughout a water body
- Compliance with Idaho's water quality standards will be driven by fish tissue data



# Hybrid Monitoring Approach

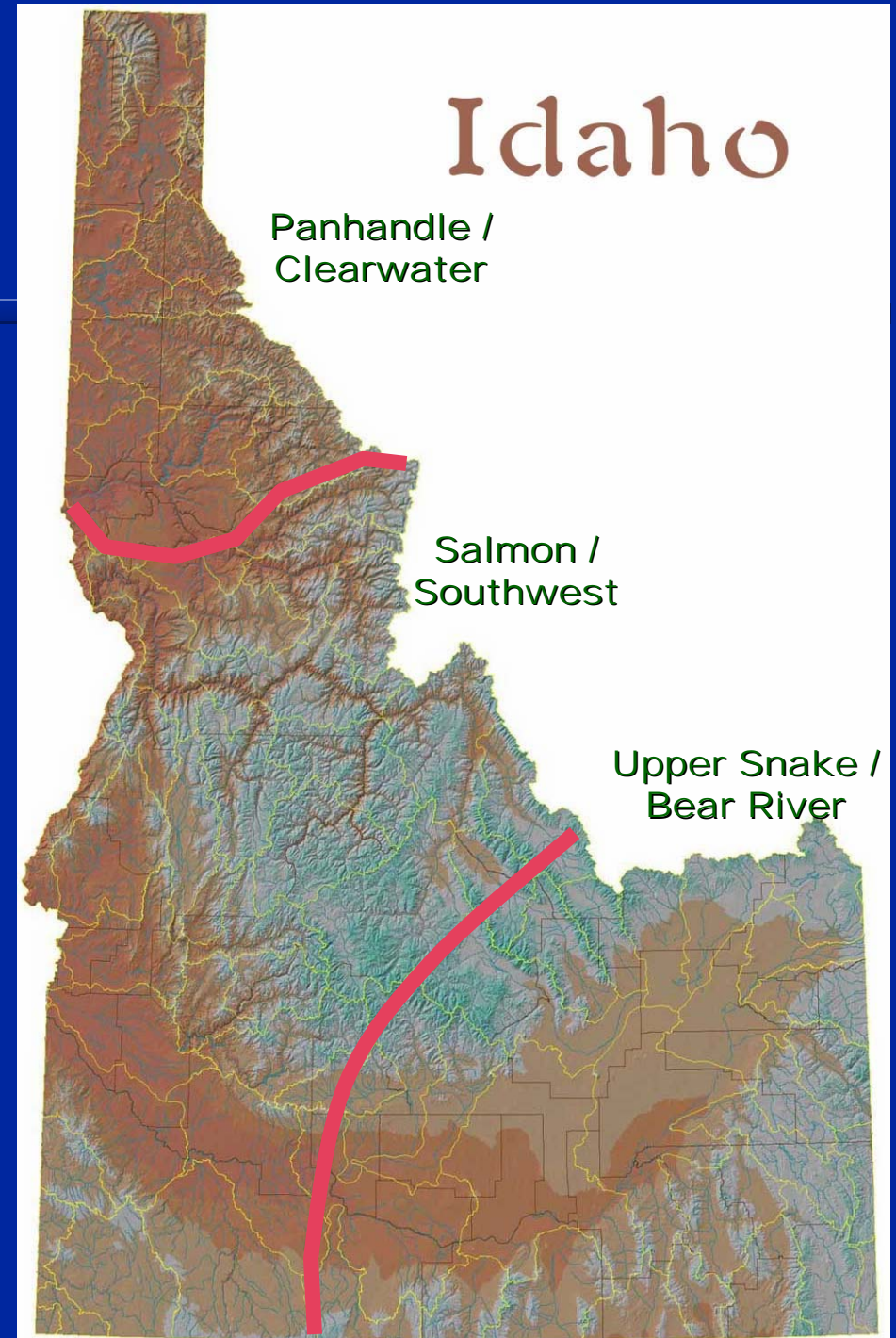
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- Statewide ambient monitoring
  - Impacts of discharges on aquatic life directly tie into the TMDL program and NPDES permitting
- Facility/source monitoring
  - Discharges of mercury to the environment need to be tracked (facility/source)



# Tiered Approach

- 4th level HUCs aggregated into three regions, then prioritized
- n = 84 total
- n = ~23/year





# Prioritization Criteria

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1. Potential or actual mercury contamination in the water body
2. Frequency of fishing activities
3. NPDES discharger requirements
4. Public interest in the water body





# Schedule

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- Initially, within each regional basin, each HUC to be sampled at least once every 5 years
  - Higher priority sampled earlier in 5-year cycle
- Adaptive approach allows shifting of resources as data available
  - High-priority sampled more frequently





# Waterbody Selection

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- Deterministic
  - Reservoirs/lakes have highest priority, followed by 5th order rivers, and lastly 4th order and lower
  - Two core sites per region monitored annually
- Probabilistic
  - HUCs that do not include deterministic stations, representative of varied conditions



# Sampling Protocols

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- Rely largely on IFCAP protocols for data transferability
- Target resident species
  - Reservoirs/lakes: bass initially
  - Streams: regional-specific, but highest trophic level present
- 10 samples per location
  - Composite initially analyzed
  - If concentration is within 20% of criterion, individuals will be analyzed
- Skinless fillets



# Next Steps

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- Rule was adopted by IDEQ Board in November 2004, will be introduced in 2005 legislative session
  - EPA approval required to become final
- Monitoring approach in guidance is proposed
  - Expected to be refined based on input from stakeholders





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# Questions?